DOCUMENT RESUME

ED 394 419 HE 029 113

AUTHOR Stallworth-Clark, Rosemarie; And Others
TITLE The Teaching-Learning Process and Postsecondary At-Risk Reading Students: Cognitive, Metacognitive, Affective, and Instructional Variables Explaining Academic Performance.
PUB DATE Apr 96
NOTE 34p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, April 8-13, 1996).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; *College Students; Higher Education; *High Risk Students; Learning Strategies; *Reading Difficulties; *Reading Instruction; *Remedial Programs; Student Characteristics; Teaching Methods

ABSTRACT

This study investigates the combined effect of student characteristics and instructional method on at-risk college students' academic performance. It examines the relationship of student characteristics and instructional methods to the performance variables of students' grades in a mandatory reading/study course for reading-deficient students; students' scores on a college reading placement examination (exiting scores); and students' grade point averages in self-selected, reading-intensive core curriculum courses earned during the quarter subsequent to completion of the reading/study course. Multiple regression commonality analyses indicate that students' cognitive aptitude for college contributed the largest proportion and the only statistically significant variance to the college placement examination exiting scores and to subsequent grade point averages in reading-intensive core-curriculum courses. The at-risk students' metacognitive awareness of reading/study requirements for college and their affect toward learning in college appeared to have had little effect on their performance. Teaching method contributed the largest proportion and statistically significant variance to students' grades with a small effect on grade point average in subsequent reading classes. Students who were in whole language classes received higher grades in the reading/study course; students with reading/learning strategy training earned the highest grade point averages in subsequent core curriculum courses. Those who received basic reading skills instruction earned the lowest subsequent grade point averages in reading-intensive, core-curriculum courses. (Contains 112 references.) (Author/NAV)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 394 419

The Teaching-Learning Process and Postsecondary At-Risk Reading Students: Cognitive, Metacognitive, Affective, and Instructional Variables Explaining Academic Performance

Rosemarie Stallworth-Clark
Georgia Southern University

Janice S. Scott
Clayton State College

Sherrie L. Nist
University of Georgia

CE 029 113

BEST COPY AVAILABLE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Rosemarie Stallworth-Clark

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

The Teaching-Learning Process and Postsecondary At-Risk Reading Students: Cognitive, Metacognitive, Affective, and Instructional Variables Explaining Academic Performance

Rosemarie Stallworth-Clark Georgia Southern University
Janice S. Scott Clayton State College
Sherrie L. Nist University of Georgia

This study investigated the combined effect of student characteristics and instructional method on at-risk college students' academic performance. Specifically, the research examined the relationship of student characteristics and instructional methods to the following performance variables: (a) students' grades in a mandatory reading/study course for reading-deficient students; (b) students' scores on a college reading placement examination (exiting scores); (c) students' grade point averages in self-selected reading-intensive core curriculum courses earned during the quarter subsequent to completion of the reading/study course. The following research questions guided the study: (a) what at-risk student characteristics—cognitive, metacognitive, and affective—are most important to reading/study performance in college? (b) what instructional method appears to better prepare at-risk students for the demands of college reading/learning tasks?

Multiple regression commonality analyses indicated that students' cognitive aptitude for college contributed the largest proportion and the only statistically significant variance to the college placement examination exiting scores and to subsequent grade point averages in reading-intensive core-curriculum courses. The at-risk students' metacognitive awareness of reading/study requirements for college and their affect toward learning in college appeared to have had little effect on their performance. Effect of teaching method received by students in the mandatory course varied with the task. Teaching method contributed the largest proportion and statistically significant variance to students' reading/study course grades and had a small effect on grade point averages in subsequent reading-intensive core-curriculum courses. Students who were in whole-language classes (combined reading/writing class sections) received statistically significantly higher grades in the reading/study course. However, students who had received reading/learning strategy training in the reading/study course earned the highest grade point averages in subsequent core-curriculum courses, although not statistically significantly higher. Students who received basic reading skills instruction in the reading/study course earned the lowest subsequent grade point averages in reading-intensive core-curriculum courses.

Academically under-prepared college students are not new to higher education in the United States, nor are the diverse programs that serve them. College academic assistance programs may be traced as far back as the mid to latter 19th century to preparatory courses designed to help students overcome academic deficiencies (Boylan & Bonham, 1992; Brier, 1985; Cross, 1976; Kulik, Kulik, & Shwalb, 1983; Wyatt, 1992). Indeed, the literature indicates that by the turn of the century most of the nation's colleges and universities (including Harvard, Yale, Princeton, and Columbia) had established some type of program to assist students who were not prepared for the academic demands at their institution (Boylan, 1988; Charters, 1941; Maxwell, 1979; Moore, 1915; Stone & Colvin, 1920). These initial courses were designed to assist students primarily in reading and learning skills. By the 1950s and 1960s, assistance programs were emphasizing affective development as well as learning skills, and special advisement sessions were offered for students who were admitted to college through open-admissions policies (Kulik, Kulik, & Schwalb, 1983; Wyatt, 1992).

Among the nation's institutions of higher education, 91% of all public colleges and 58% of all private colleges continue a commitment of support for under-prepared college freshmen by providing programs that anticipate students' academic problems in reading, writing, and math (Bureau of the Census, 1993). Among the high percentage of public institutions offering support, 82% offer courses in reading. Census estimates are that among the freshman classes at these postsecondary public institutions, approximately 200,000 (13% of all freshmen) annually take a course identified as a reading course.

The teaching of postsecondary reading is often combined with instruction in the application of task-specific learning strategies. Thus, it is difficult to separate reading and studying instruction at the postsecondary level. A number of researchers have documented the widespread current existence of postsecondary reading/study courses and programs in the nation and the placement

HE029 113

criteria that guide them (Abraham, 1988, 1991; Boylan, Bonham, & Bliss, 1994; Morante, 1986; Thompson, 1993; Tinto, 1987). Typically, the students taking reading/study courses are those who have been identified as "at risk" (of not continuing to graduation) because they are presumed to lack the verbal competencies necessary to perform college-level reading/study tasks. At most institutions, college applicants are mandatorily placed into prerequisite reading courses because of unacceptable scores on the Scholastic Aptitude Test (SAT) or the American College Test (ACT) and low high school grade point averages (HSGPAs) or both. Often, Predicted Freshman Average Grade (PFAG) regression equations assist in this placement.

Presently throughout the nation, there appear to be three distinct instructional methods employed in postsecondary reading/study programs. Instructional approaches are (a) a basic skills method which supports instruction that promotes the practice and improvement of specific and discrete reading skills; (b) a strategy training method through which college reading is viewed to be dependent upon the student's self-regulation of a repertoire of reading and learning strategies which can be taught and transferred to subsequent college contexts; and (c) a combined reading and writing method in which college reading is viewed to be dependent upon the student's development of language skills, primarily reading and writing skills, in the tradition of a whole-language approach to language development.

Critics complain that courses designed to assist under-prepared college students are woefully lacking in areas of empirical research (Boylan & Bonham, 1992; Hennessey, 1990; Roueche & Snow,1977). Research is needed to advance the field of college reading education both theoretically and practically. There have been no studies reporting the comparative effects of instructional methods used across a college reading/study program as various methods combine with the unique characteristics of students to affect academic achievement. It is unique, indeed, to have the opportunity to examine different teaching methods within the same departmental program among a large number of cordial, participating faculty and students. Such was the fortuitous circumstance for the present study that was guided by the following overriding questions: (a) what at-risk student characteristics—cognitive, metacognitive, and affective—are most important to reading/study performance in college? and (b) what instructional method appears to better prepare at-risk students for the demands of college reading/learning tasks?

Method

The general design of the present study was best met by multiple regression commonality analysis (Pedhazur, 1982), with a set of variables explaining variance in student performance variables. The explanatory variable sets included student characteristics (continuous variables) and teaching method (a categorical variable with four levels) used in a mandatory reading course. Student characteristics were operationalized as the following sets of variables: (a) cognitive aptitude for college, as measured by students' Scholastic Aptitude Test verbal score (SATVERBAL), students' high school grade point average (HSGPA), and students' scores on the College Placement Examination in Reading (READING EXAM-PRE); (b) metacognitive awareness of college reading/study requirements (META1-PRE and POST and META2-PRE and POST); (c) affect toward learning in college, (AFFECT-PRE and POST). The present study used three Learning and Study Strategies Inventory (Weinstein, Palmer, & Shulte, 1987) (LASSI) latent variable scales identified by Olejnik and Nist (1992) as metacognitive and affective measures. The READING EXAM (different forms) and the LASSI (same college form) were administered prior to the reading/study course and again at the end of it. The four teaching methods were labeled in the reading course as the following: (a) a basic skills method; (b) a strategy training method; (c) a study strategy training-plus method (strategy training with some instruction in analytical reading processes); (d) a whole-language method, that is, combined reading/writing instruction.

Student Variables

Learning characteristics of at-risk students were expected to contribute to their academic performance in college. Cognitive, metacognitive, and affective characteristics of the students were assessed.

Cognitive Aptitude for Learning in College

Cognitive variables that have proved to be important predictors of success in college include prior achievement and performance variables such as the Scholastic Aptitude Test and the student's high school grade point average (Fincher, 1984; Keller, Crouse, & Trusheim, 1993; Stricker, Rock, & Burton, 1993). Although some studies have shown that non-intellectual variables play important roles in academic performance in college (Astin, 1971, 1977, 1991; Larose & Roy, 1995; McCombs, 1988; Pascarella & Terenzini, 1991), cognitive aptitude variables (in terms of students' aptitude for the academic rigor of college) have historically been the primary predictors for academic success in college. Although the relative strength of contribution from SAT scores and HSGPA vary from institution to institution, there is no doubt that support is well established in the literature for including SAT verbal scores and HSGPA for prediction of freshman academic performance in college (Chissom & Lanier, 1975; Fincher, 1984; 1985; Hills, 1964; Hills, Bush, & Klock, 1965; Keller, Crouse, & Trusheim, 1993; Stricker, Rock, & Burton, 1993).

Appropriate, standardized predictive criteria notwithstanding, applicants are accepted provisionally into prerequisite academic assistance courses throughout the nation although they do not possess aptitude scores (SAT scores) and HSGPAs that predict success in college. Consequently, university systems and institutions have developed unique methods for assessing academic competencies and for appropriately placing students. In Georgia, college applicants who are deficient in SATVERBAL scores or HSGPA or both are required to take a college placement test, the College Placement Examination in Reading (READING EXAM) in order to assess their basic reading aptitude for college reading tasks. The test was developed by the state's university system in collaboration with American College Testing to measure skills required in the 1988 College Preparatory Curriculum (University System Board of Regents, 1993). The READING EXAM is a timed (45 minute), four passage, 40 question reading comprehension test. Students are asked to identify main ideas, draw inferences, select word meanings in context, draw conclusions, etc.

In the present study, The READING EXAM-PRE was administered for placement purposes soon after the student was admitted to the university. The READING EXAM-POST was administered by the reading course instructors in their classrooms at the end of the reading course. Tests were scored by the reading course office staff. Scores were entered into the university Student Information System by reading course office staff.

Metacognitive Awareness

Metacognitive awareness among postsecondary students is generally defined in terms of students' awareness of the activities and processes used to regulate their own learning and memory. Some researchers have shown that metacognition is relevant to academic performance (Baker & Brown, 1984; Paris, Lipson, & Wixson, 1983; Weinstein & Mayer, 1986). With regard to reading/study tasks, good readers have been described in the literature to be strategic readers, that is, good readers are more planful and metacognitively aware. Thus, good readers understand the requirements of various reading/study tasks better than non-strategic (poor) readers (Baker, 1985; Brown & Palincsar, 1987; Paris & Myers, 1981; Peterson, 1988). In the present study, students' metacognitive awareness of reading/study requirements of college tasks was measured by the LASSI (Weinstein, et. al., 1987) latent variable scales, Cognitive Activities and Goal Orientation (Olejnik & Nist, 1992).

Affect Toward Learning in College

Students' affect toward college as evidenced by their effort-related activities (Rohwer & Thomas, 1987; Olejnik & Nist, 1992) has been described as an indication of the student's willingness to take responsibility for personal achievement and to self-regulate learning. Therefore, cognitive activities, working together with volitional decisions, have been reported to (the will to exert the effort to accomplish academic tasks), promote the autonomous work of college study (McCombs, 1988; Paris, 1988; Thomas, 1980; Thomas & Rohwer, 1986). In sum, students' affect toward the demands of college is evidenced in their willingness to independently study and persevere until they are prepared. The principle that emerges is that there are reciprocal relationships between cognitive, metacognitive, and affective learner characteristics. Further, students who take responsibility for the management of their own learning activities are more likely to exhibit appropriate learning behaviors than those students who have not learned to take responsibility for success and failure. In the present study, students' affect toward learning in college was measured by the LASSI (Weinstein, et. al., 1987) latent variable scale, Effort-related Activities (Olejnik & Nist, 1992).

Instructional Variables

An extensive review of the literature indicated that methods used in the present study are supported by the following epistemological stances: (a) a transmission stance that supports the teaching of discrete reading sub-skills; (b) an interaction stance that supports the teaching of metacognitive strategies for learning from college texts; (c) a transaction/social construction stance that supports the combining of reading and writing instruction in a student-centered approach to literary criticism and self-development.

A Transmission Model

This theoretical model for reading acquisition embraces elements of early reading theories and instructional methodologies traditionally evidenced in the nation's reading classrooms where the basic skills of reading have been directly instructed and drilled. Transmission adherents hold to the conventional view that the meaning of text rests outside of the reader who is expected to translate the text author's meaning as represented in the text (Binkley, Phillips, & Norris, 1995). Consequently, translation of the author's intention is viewed to be the purpose of reading. Further, reading is considered to be a "bottom-up" process, progressing from the smallest element to the largest element, and is dependent upon the acquisition of reading subskills (basic skills) or low level, text processing skills that must be developed in discrete, sequential stages.

A Basic Skills Method. The theoretical emphasis upon the need for practice (drill) of sequential and discrete reading skills with a focus on the developmental stages of reading has influenced the teaching of basic skills of reading in postsecondary settings. The comprehension models of Holmes (1953), Gough (1972), LaBerge and Samuels (1974), and Chall (1983) may be considered to be epistemologically supportive of the teaching of basic reading skills in a bottom up, transmission approach to reading instruction.

Moreover, the emphasis upon standardized reading tests for assessment and placement of students in school settings has been influential in the proliferation of the basic skills method (Robinson, Faraone, Hittleman, & Unruh, 1990). When comprehension first began to be assessed with multiple-choice formats and isolated paragraphs of texts (in the early 1900s), teachers began to use testing formats for teaching reading. Reading practitioners introduced "remedial reading" (p. 75) exercises and drills related to the skills assessed on the tests (as well as the reading of directions) as the method for teaching reading comprehension, and the ubiquitous "basal reader" was introduced as the reading text for the instruction of reading skills. In the same way that children have been drilled in reading subskills with basal readers, under-prepared college students

have been drilled in postsecondary settings with sequenced reading exercises and comprehension tests (Marzano & Paynter, 1994).

An Interaction Model

In contrast to a transmission view of reading development, an interaction model for reading describes interactions between the text and the reader. That is, meaning is considered to reside not only in the text but also within the reader (Rumelhart, 1994). The comprehension model includes sensory, syntactic, semantic, and pragmatic information in complex interactions during the process of reading. Interaction models of reading show parallel processes interacting at various levels with knowledge sources of readers in highly interactive parallel processing systems (Anderson & Pearson, 1984; Anderson & Pichert, 1978; Bransford & Johnson, 1972; Brown, Campione, & Day, 1981; Just & Carpenter, 1980; Kintsch, 1994; Perfetti, 1983, 1989, 1991, 1992; Perfetti & Curtis, 1986; Rumelhart, 1994; Rumelhart & McClelland, 1980; Sinatra & Royer, 1993; van Dijk & Kintch, 1983).

The belief that interactive readers direct their own cognitive resources to comprehend text has led to investigations concerned with readers' knowledge and use of cognitive resources. Working with adults in this research, information-processing cognitive psychologists have described "executive control processes" (Garner, 1994, p. 715) which have to do with the control learners bring or do not bring to the reading/learning task. Information processing approaches to understanding reading/learning behaviors focus on input into and output from the reader's cognitive system, specifically, how it is that information enters, is processed, and stored. Further, automatic processing of input is viewed to increase readers' problem-solving capacity in routine tasks, and control resources increase the capacity to solve problems in novel tasks.

Reading as an interaction of the reader's knowledge structures and component processes with textual structures and content is different from views that consider the act of reading a matter of adding up to give the meaning of the whole. Most interactional perspectives include the notion that a reader's knowledge base, that is, schemata, consists of organized sets of cognitive structures and that comprehension occurs when textual information can be fitted into these cognitive structures. Interpretation of text is thus related to the knowledge and strategic learning repertoire that the reader brings to the text as well as the reader's deployment of component processes (executive control processes). In other words, reading/learning is assumed to involve the interaction of the reader's knowledge base (schemata) with text (the author's schemata) through the deployment of cognitive processes that may be strategically practiced.

A Strategy Training Method. The strategy training instructional method is supported epistemologically by the interaction model of reading. The teaching approach seeks fundamentally to train students in learning strategies necessary for the efficient processing of text. Instructors seek to prepare self-directed learners who will plan and control their learning in college reading/study tasks. Students are taught to deploy strategies selectively through personal "executive control" of appropriate strategies that are effective for encoding and retention of information. Moreover, strategy training for postsecondary students who are underprepared for college reading/study tasks is advocated in terms of the characteristic needs of poor college-level readers and the empirical support for instruction in learning how to learn (Brown, Bransford, Ferrara, Campione, 1983; Linden & Wittrock, 1981; Wittrock, 1981).

A Transactional/Social Construction Model.

Transactional-social construction models for reading have evolved through theoretical inquiries in interrelated disciplines (Straw, 1990), particularly those concerned with literary criticism of texts that have a preponderance of implicit meanings. Contributing theorists have included those who have investigated how knowledge has been socially patterned and conditioned (Hunt, 1990; Hynds, 1990; Vygotsky, 1978). The predominance of work associated with transaction has been concerned with the social-construction of knowledge, that is, how it is that multiple transactions may

result from the same text (Bleich, 1980; Fish, 1980; Rosenblatt, 1978; Straw, 1990).

Generally, transactional theorists contend that reading is a generative act that involves the reader's use of various knowledge sources in order to construct a response to text, and also that the meaning of text is indeterminate, constructed by readers while reading (Binkley, Phillips, & Norris, 1995). Unlike a transmission view of reading, reading acquisition does not depend on formal, sequential instruction. And unlike interactive models that consider the reader and text as two separate interacting entities, transactional theorists view reading to be the result of inseparable reader and text entities as readers and texts transact to construct meaning. Further, social constructivists add to the notion of transaction, a social construction of meaning--meaning not constructed by a single reader or writer—but a construction of meaning by society as a whole (Guthrie & Greaney, 1991).

A Whole-Language Method. A whole-language method for instruction is logically situated within transaction and social construction theory. As the term implies, whole- anguage learning includes all of the venues for learning within a student's language environment. As such, it is an approach to classroom learning that is described in philosophical and holistic terms by its advocates (Bartholomae & Petrosky, 1986; Cambourne, 1988; Monson & Pahl, 1991; Rosenblatt, 1985).In the whole-language view, the reader's conceptual schemata and values are altered through reading as meaning is constructed in a social environment (Goodman, 1985). Instructional emphasis is upon construction of meaning through the integration of skill, background knowledge, and purposes and attitudes of the reader as meaning is influenced by the personal, social, and cultural environment of the reader. The whole-language approach to learning in the classroom is so different to traditional models that some have contended whole-language classrooms provide evidence of a paradigm shift in the way teachers think and practice (Rich, 1985).

In postsecondary reading/study courses described by adherents as whole-language reading/writing courses, students may be asked to respond to several literary texts. Reading is not considered to be separate to a student's capacity to write, listen, and speak. The purpose of reading is increasingly viewed by post-secondary whole-language advocates to be actualization of the reader rather than communication with the reader (Bartholomae & Petrosky, 1986, McLaughlin, 1993).

Participants

Participants for this study were recruited from among instructors and students comprising a reading course for reading-deficient students at a medium sized regional university in the southeastern United States. Students were considered to be typical of under-prepared freshmen enrolled in similar postsecondary academic assistance programs in the United States that are designed to strengthen reading/study competencies for college. Eighteen (out of 19)instructors teaching 31 sections of the reading course participated in the study.

Measures

Instruments were chosen to assess students' cognitive, metacognitive, and affective characteristics. Two questionnaires (one for instructors and one for students) were developed by the researcher to assist in identifying teaching methodologies.

Student Characteristics (Metacognition and Affect)

The LASSI (Weinstein, et., al., 1987) was selected to assess students' metacognitive and affective characteristics. Participating students completed and self-scored the LASSI during the first week, and then again during the last week of the reading course. The LASSI was developed as a major objective of the Cognitive Learning Strategies Project (Weinstein, Zimmermann, & Palmer, 1988) in efforts to assist in the implementation of an increasingly large number of postsecondary learning and study strategies courses being offered throughout the nation. The Likert-type

response inventory is easily self-administered and scored in 20 to 30 minutes. Immediate feedback is provided for students as they plot their individual scale scores on a percentile rank table. There are 10 identified LASSI scales in the User's Manual (Weinstein, 1987). Specifically, the LASSI scales indicate the authors' labeling of the following constructs: Attitude, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self Testing, and Test Strategies. No total score for the inventory is computed, nor is a total score recommended. Rather, students compute a score for each of the 10 scales.

Studies with regularly-admitted freshmen have supported the use of the LASSI as an effective tool for predicting academic performance in college level classes (Hulick, & Higginson, 1989; McKeachie, Pintrich, & Lin, 1985). However, caution is advised when using the LASSI for assessments of at-risk students (Deming, Valeri-Gold, & Idleman, 1994; Ickes & Fraas, 1990; Mealey, 1988; Nist, Mealey, Simpson, & Kroc, 1990; Olejnik & Nist, 1992). LASSI scales do not appear to correlate as well with academic GPAs for underprepared students as for regular college students. The most problematic issue appears to be the development of the LASSI norms, reported in terms of percentile scores in the LASSI User's Manual (Weinstein, 1987). Norms were developed from a sample of 800 incoming regularly-admitted freshmen from a single, major southern university (Weinstein, Zimmermann, & Palmer, 1988). The nature of this norming population may decrease the suitability for use of the LASSI with at-risk college students in two critical ways: (a) at-risk college students are not typical, regularly admitted college students; thus, comparison of two student populations jeopardizes generalizability; and (b) students attending one institution may not be typical of incoming freshmen nationwide.

A study to examine the LASSI's construct validity and usefulness for studies with adult learning models was conducted with at-risk students at a large southeastern university (Olejnik & Nist, 1992). The investigators were interested in whether the LASSI could be used to measure constructs proposed in learning models for adults. Based on LASSI sub-scale correlations, the three latent variables identified in the study are assumed to represent the inventory's simple structure when used with at-risk college students. A structural model indicating maximum likelihood estimates of correlation coefficients in this at-risk student study is presented in Figure 1.

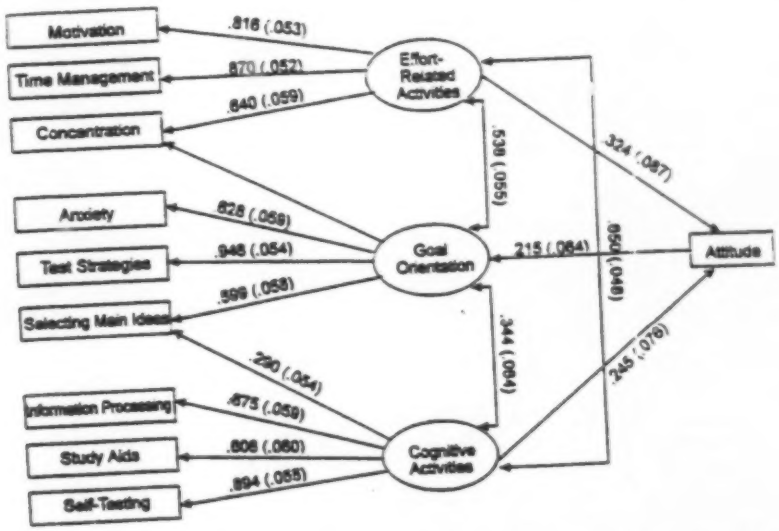

Figure 1. LASSI exploratory and confirmatory factor analysis with at-risk students using sub-scale correlations. Values are maximum likelihood estimates of the correlation coefficients: values in parenthesis are the standard errors (Olejnik & Nist, 1992, p. 156).

BEST COPY AVAILABLE

Instructional Method

Instructional methods used in the reading course were identified through the following data collection activities: (a) an instructor questionnaire; (b) examination of materials used in instructors' classes; (c) a student questionnaire administered by the instructors at the end of the course; (d) follow-up interviews with some of the instructors.

Instructors' Perceptions of Teaching Role

An instructor questionnaire was developed to collect the following information: (a) the instructor's perception of the teaching role in the college reading class and (b) a description of the activities and materials used in the course. After describing the above, instructors were asked to categorize themselves as to the method that most nearly described their classroom teaching. Because the researcher expected to find three primary teaching methods, instructors were asked to select between descriptions of the following methods: (a) a basic skills method, (b) a strategy training method, (c) a whole-language method. Analysis of the instructors' questionnaires indicated not only three methods, but a variation on strategy training to include instruction in analytical reading strategies. This researcher believed that that instructors described their perceptions of the teaching role in the reading/study course as they responded to the open-ended questions. Their comments supported their teaching method classifications. Descriptive phrases drawn from their questionnaires were assumed to reflect their perceived teaching roles. The following roles were described by the instructors:

A Basic Skills Teaching Role. Those who categorized themselves as basic skills instructors described their roles in the following examples: "guides to information;" "teach many skills;" "see myself as a diagnostician to determine a student's weak skills;" "I give explanations, direct practice and give immediate feedback;" "see myself as providing materials and learning situation/environment in which students can make individual progress."

Among basic skills instructors, primary instructional materials listed ranged from "required textbook with novel and skill practice sheets" to "my own materials." Although cooperative learning groups were listed, group activities were always listed last by these instructors. Direct instruction was the first teaching strategy listed by all four of the basic skills instructors.

A Strategy Training Teaching Role. Those who typed themselves as strategy training instructors (without qualifying comments) described their roles in the following examples: "an enabler to develop students who will be successful in reading in various disciplines through the development of reading/study strategies;" "a developer of positive attitude toward learning for transfer to other classes;" "as a guide to promote students' self-awareness of weak areas;" "to teach students how to manage their major reading classes in college;" "to guide and conduct;" "to help students to put knowledge to use for themselves."

Direct instruction and lecture recitation were the first teaching strategies listed by four of the five instructors. One instructor listed "group problem-solving" as her primary teaching strategy. Cooperative groups were listed by all. Only one strategy training instructor listed student cooperative learning groups last.

A Strategy Training-Plus Teaching Role. Strategy training-plus instructors categorized themselves in strategy training roles with qualifying comments such as "I basically use a reading/study strategy approach, but also draw elements from both the basic skills and whole language approaches;" "to present strategies that will help students become proficient in reading and studying at the college level;" "I do use some skill instruction for inference, figurative language, and tone and mood...I also use journals to reinforce what students are learning;" "I do use the skills approach to teach students to analyze shorter reading selections;" "some of the whole language approach since students use journal writing as a way to evaluate comprehension;" "vary my teaching strategies to meet specific objectives"; "role is to assess the needs of my students."

Analysis of primary instructional materials used in strategy training-plus classes indicated a focus on learning strategies for reading-intensive core curriculum courses. The teaching texts were the same in strategy-plus and strategy training instructors' classes; that is, all used a text for developing reading/study strategies for college texts in various social and natural sciences. In addition, most of both groups of instructors also used a weekly news magazine for instruction. All of the strategy training-plus instructors stated that they varied their teaching strategies among direct instruction, lecture-recitation, and cooperative learning groups. One of these instructors stated that she used lecture-recitation and direct instruction most often. Another added that some days she used more than one of the listed strategies.

A Whole Language Teaching Role. All of the instructors who categorized themselves as whole language instructors described their teaching role to be that of a "facilitator of learning." In descriptions of the whole language teaching role, instructors made comments such as: ..."helping students find whole worlds previously unknown to them through their reading;" "one who provides students with numerous opportunities to transact with texts;" "want students to see the significance of reading;" "a motivator of student involvement;" "to only present material in an interesting fashion."

Materials listed by these instructors were primarily various forms of literature, such as novels, autobiographies, essays, and reader anthologies. One whole language instructor reported the use of a textbook designed to improve reading proficiency. This same instructor stated that she used all of the listed teaching strategies. Five of the six whole language instructors listed cooperative learning groups and group discussions as the predominant teaching strategy in their classrooms.

Students' Perceptions of Teaching Roles

Student questionnaires were used as "confirmation surveys" (Goetz & LeCompte, 1984, p. 121) to supplement the descriptive data collected from the instructors. Thus, the large number of students who could not be examined individually were allowed to provide valuable data that served somewhat "for data quality control" (p. 185). Specifically, enumeration of student responses provided support for the method categories described by the instructors.

Features Common to All Teaching Methods. Analysis of the student questionnaires indicated that three items were checked by all participating students to be features of their reading course instruction. The unanimously checked features were: (a) marking important ideas in texts; (b) analyzing readings by identifying main ideas and organizational patterns; (c) frequent interactions with classmates and teacher during class. Likewise, three items were considered by all participating students to be non-features of their instruction. Unanimously checked non-features were: (a) completion of a library research assignment that included a search for books and periodicals; (b) visiting the Learning Resources Center Tutoring Center for tutoring in reading/study strategies; (c) reading more than one assigned novel.

Features that Distinguish Teaching Methods. Several student-response patterns appeared to discriminate between instructional methods. For example, specific features identified the whole language experiences of students. Only those students of whole language instructors appeared to consider the following items to be features of their instruction: (a) using a word processor for completing writing assignments; (b) writing evaluations of classmates' work; (c) keeping a portfolio of one's own work. In addition, taking lecture notes, was checked as a non-feature by whole language students only.

Specific non- and indeterminate features identified the basic skills method. Basic skills instruction was the only method not described by the students as instruction including self-evaluations of personal work, the annotation of text, and a conference with the reading course instructor. Further, basic skills instruction differed from all other methods concerning oral presentations, describing the activity as neither a feature nor a non-feature (0), while other methods

BEST COPY AVAILABLE

described oral presentations as a non-feature (-). Numbers of instructors and students by method in the present study are presented in Table 1.

Table 1.
Number of Participating Instructors and Students by Method

Method	Instructors	Class Sections	Participating Students
BS	4	6	81
ST	5	10	167
ST+	3	6	80
WL	6	9	195
Total	18	31	523

Note: BS = basic skills instruction; ST = strategy training instruction; ST+ = strategy training plus analytical reading instruction; WL = whole language instruction.

Data Analysis

The design of the present study called for the analysis of both quantitative and qualitative data. Quantitative data describing student characteristics were collected from Admissions Office records at the university and through students' responses on the LASSI. Qualitative data describing instructional variables were collected through open-ended student and instructor questionnaires. In this study, subjects for whom complete data were available were assumed to be representative of subjects for whom data were incomplete. The primary statistical technique employed in the study was multiple regression analysis with analyses of variance when appropriate. In order to identify any statistically significant differences among students prior to the study, one-way analyses of variance were performed for comparison of students' pre- scores on explanatory variables by teaching method. Pre-course group means by method for maximum number of students are reported in Table 2.

For each method group, differences between means were analyzed by use of a calculated F value. Post-hoc pair-wise comparisons (Scheffe', 1953; Tukey, 1954) were used to identify significant differences where a significant F ratio was obtained on the READING EXAM-PRE. However, these post-hoc statistical procedures analyzing each possible pair of means to determine if two means are significantly different from one another did not indicate statistically significant differences between the method means. An analysis of variance summary table of the same pre-course student variables by method is presented in Table 3.

Table 2
Pre-Course Group Means by Method for Maximum Number of Students

	Method			
Teachers	BS (n = 4)	ST (n = 5)	ST+ (n = 3)	WL (n = 6)
Student Variable				
SATV				
M	315.06	318.5	318.4	319.01
SD	41.57	44.93	37.38	43.28
HSGPA				
M	2.55	2.56	2.57	2.57
SD	0.51	0.47	0.43	0.43
READING EXAM-PRE				
M	73.39	74.02	74.87	74.59
SD	3.82	3.94	3.44	3.61
META1-PRE				
M	75.35	76.49	76.88	76.54
SD	12.88	13.61	13.42	13.16
META2-PRE				
M	64.93	64.67	63.5	65.16
SD	13.15	11.96	13.22	13.43
AFFECT-PRE				
M	80.76	80.3	79.85	82.27
SD	14.98	15.11	16.45	14.48

Note. SATV = Scholastic Aptitude Test, Verbal Score; HSGPA = high school grade point average; READING EXAM-PRE = College Placement Examination in Reading Pre score; META1-PRE = Metacognitive1 Pre score; META1-POST = Metacognitive1 Post score; META2-PRE = Metacognitive2 Pre score; META2-POST= Metacognitive2 Post score; AFFECT-PRE = Affective variable Pre score.

Table 3
Summary Table for Analysis of Variance of Pre-Course Group Means by Method

Variable	Ms_{method}	Ms_{error}	df_{error}	F
	Between Methods			
SATVERBAL	313.36	1829.10	511	0.17
HSGPA	0.01	0.21	517	0.05
CPERDG-PRE	39.19	13.90	507	2.82*
META1-PRE	37.21	177.05	507	0.21
META2-PRE	52.95	166.23	507	0.32
AFFECT-PRE	161.64	227.57	506	0.71

* $p < .05$

Demographic Characteristics of Student Sample

The at-risk students were recruited for the study by their instructors. The initial sample of students was comprised of 523 of the 715 students enrolled in participating instructors' classes. Demographics for the entering 523 student sample are shown in Table 4.

Table 4
Demographics of Entering Students

	Percent	n
Gender		
Female	59.7	312
Male	40.3	211
Ethnicity		
African-American	52.4	274
American Indian	0.2	1
Asian-Pacific Islands	0.6	3
Hispanic	1.0	5
Caucasian	45.9	240

The students who successfully exited the reading course and enrolled at the university the following quarter totalled 402. The mean age of both entering and exiting student samples was 19.4 with a standard deviation of 1.9 years. Exiting student demographics are reported in Table 5.

Table 5
Demographics of Exiting Students

	Percent	n
Gender		
Female	61.7	248
Male	38.3	154
Ethnicity		
African-American	48.3	194
American Indian	0.2	1
Asian-Pacific Islands	0.5	2
Hispanic	1.0	4
Caucasian	50.0	201

Descriptive data for students on explanatory and dependent variables are included in Table 6.

Table 6
Descriptive Data for Student Variables

Variable	n[a]	M	SD
HSGPA	521	2.56	0.46
SATVERBAL	515	318.14	42.66
READING EXAM-PRE	511	74.2	3.75
META1-PRE	511	76.39	13.28
META1-POST	427	83.06	15.87
META2-PRE	511	64.71	12.87
META2-POST	427	71.63	14.27
AFFECT-PRE	510	81.01	15.07
AFFECT-POST	427	84.42	16.88
READING COURSE	503	79.78	9.97
READING EXAM-POST	517	76.1	4.77
GPARC	301[b]	1.72	1.03

Note. [a]Number of initial sample of 523 students who provided data on variable. [b]Exited students only. SATVERBAL = Scholastic Aptitude Test, Verbal Score; HSGPA = high school grade point average; READING EXAM-PRE = College Placement Exam in Reading-Pre score; READING EXAM-POST = College Placement Exam in Reading-Post score; META1-PRE = Metacognitive1 Pre-score; META1-POST = Metacognitive1 Post-score; META2-PRE = Metacognitive2 Pre-score; META2-POST= Metacognitive2 Post-score; AFFECT-PRE = Affective Pre-score; AFFECT-POST = Affective Post-score; READING COURSE = Reading Course Grade; GPARC = Grade Point Average, Winter 1995, Reading-Intensive Courses in Core Curriculum.

In order to determine interrelationships among the independent and dependent variables, Pearson product-moment correlations were calculated. Intercorrelations between variables are included in Table 7 for maximum number of students providing complete data. Several intercorrelations of the independent variables were statistically significantly correlated. For example, significant intercorrelations existed among the three dependent variables, READING COURSE grade, READING EXAM-POST, and GPARC. The at-risk students' SATVERBAL scores were negatively, significantly correlated with their HSGPAs. The students' metacognitive characteristics were significantly correlated with their affect for learning in college. With the exception of the affect variable's significant correlation with HSGPA, READING COURSE GRADE, and GPARC, and significant correlations between META2-PRE and POST with the READING EXAM-POST, the metacognitive and affective variables were not significantly correlated with other variables.

BEST COPY AVAILABLE

Table 7
Intercorrelations Between Variables for Maximum Number of Students with Complete Data

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1 HSGPA	--	-.19**	.03	.08	.08	.06	.09	.17**	.12*	.05	.28**	.19**
2 SATVERBAL		--	.32**	-.07	.02	.10*	.13**	-.02	.04	.39**	.17**	.14*
3 RDG EXAM-PRE			--	-.08	.01	.05	.10*	-.02	.03	.33**	.01*	.09
4 META1-PRE				--	.55**	.27**	.23**	.54**	.38**	-.04	.05	-.01
5 META1-POST					--	.23**	.47**	.33**	.65**	.03	.03	.05
6 META2-PRE						--	.50**	.60**	.35**	.10*	.05	.09
7 META2-POST							--	.38**	.72**	.14**	.01	.06
8 AFFECT-PRE								--	.55**	.01	.12**	.12*
9 AFFECT-POST									--	.05	.02	.11
10 RDG EXAM-POST										--	.23**	.15*
11 RDG COURSE GRADE											--	.31**
12 GPARC												--

Findings

In order to examine relationships among four explanatory variable sets, R^2 increases for variables contributing to students' academic performance were generated through multiple regression commonality analysis. Instructional method was treated as a categorical variable with 4 levels (3 dummy variables) in each regression equation. Cohen's (1977) arbitrary definitions of effect size were used to evaluate the effect size of the R^2.

Reading Course Grades

R^2 increases for reading course grade are reported in Table 8.

Table 8
R^2 Increase for Reading Course Grade Attributable to Explanatory Variable Sets

Variable Set	R^2 Increase	Num df	Denom df	F
1. Cognitive	.0903	3	368	14.33***
2. Metacognitive	.0069	2	368	1.64
3. Affective	.0006	1	368	0.29
4. Method	.1562	3	368	24.81***
Full Model	.2322	9	368	12.36***

***p < .001

Variables and variable sets were comprised of the following: (1) a cognitive aptitude variable set = SATVERBAL, HSGPA, and READING EXAM-PRE; (2) a metacognitive variable set = META1-PRE and META2-PRE; (3) an affective variable, AFFECT-PRE; (4) Method, the instructional (categorical) variable.

Commonality analysis revealed that cognitive aptitude and method contributed statistically significant variance to the reading course grade. The explanatory variable of instructional method used in reading course grade accounted for 15.6 percent of the variance in students' reading course grade and was statistically significant, $F_{N,D368} = 24.81$. Therefore, the R^2 for the variance contribution of method to the reading course grade, as identified by the instructional method used in reading course, was considered to have had a large effect (Cohen, 1977) on the students' grades. A review of the students' reported grades ranked from highest to lowest were in the following order: whole-language (83.58), basic skills (83.08), strategy training plus (78.82), strategy training (74.43), respectively. An analysis of variance summary table comparing reading course grades by instructional method used in the course is presented in Table 9.

Table 9
Summary Table for Analysis of Variance of Post-Course, Reading Course Grades Group Means by Method

Variable	Ms_{method} Between Methods	Ms_{error}	df_{error}	F
READING COURSE GRADE	2743.30	83.59	498	32.83****

****p < .0001

BEST COPY AVAILABLE

The one-way analysis of variance comparing method groups in terms of students' mean grade in the reading course was significant, $F_{N3,D456} = 32.82$. Post-hoc tests (Scheffe', 1953, Tukey, 1954) for the comparison of course grades by method showed that whole language grades were statistically significantly higher than strategy training and strategy training-plus grades in the reading/study course. Whole language grades were also higher than basic skills grades but only slightly so.

READING EXAM POST SCORES

In order to examine relationships among four explanatory variable sets, R^2 increases for variables contributing to students' READING EXAM-POST scores were generated through multiple regression commonality analysis. R^2 increases are reported in Table 10.

Table 10
R^2 Increase for READING EXAM-POST Attributable to Explanatory Variable Sets

Variable Set	R^2 Increase	Num df	Denom df	F
1. Cognitive	.0869	3	362	11.06***
2. Metacognitive	.0024	2	362	0.48
3. Affective	.0000	1	362	0.00
4. Method	.0063	3	362	0.84
Full Model	.1082	9	362	4.87***

***p < .001

Note. Variables and variable sets are comprised of the following: (1) a cognitive aptitude variable set = SATVERBAL, HSGPA, and READING EXAM-PRE; (2) a metacognitive variable set = META1-PRE and META2-PRE; (3) an affective variable, AFFECT-PRE; (4) Method, the instructional (categorical) variable.

Commonality analysis revealed that only cognitive aptitude contributed statistically significant variance to the READING EXAM-POST scores. The explanatory variable of instructional method used in the reading course accounted for 00.63 percent of the variance in students' the READING EXAM-POST scores and was not statistically significant, $F_{N3,D362} = 0.84$. Therefore, the R^2 for the variance contribution of method to the students' READING EXAM-POST scores, as measured by the identified teaching method used in the reading course, was considered to have had little indicated effect on the students' READING EXAM-POST scores. Students' scores on the READING EXAM-POST were ranked by teaching method in the following order: strategy training-plus (77.23), whole-language (76.11), strategy training (75.88), basic skills (75.48).

GRADE POINT AVERAGES IN READING-INTENSIVE CORE-CURRICULUM COURSES (GPARC)

In order to examine relationships among four explanatory variable sets, R^2 increases were generated through multiple regression commonality analysis for variables contributing to students' grade point averages in reading-intensive core-curriculum courses. R^2 increases are reported in Table 11.

Table 11
R^2 Increase for GPARC Attributable to Explanatory Variable Sets

Variable Set	R^2 Increase	Num df	Denom df	F
1. Cognitive	.0697	3	236	6.11***
2. Metacognitive	.0012	2	236	0.16
3. Affective	.0051	1	236	1.34
4. Method	.0177	3	236	1.55
Full Model	.0986	9	236	2.87**

***p < .001

Note. Variables and variable sets are comprised of the following: (1) a cognitive aptitude variable set = SATVERBAL, HSGPA, and READING EXAM-POST; (2) a metacognitive variable set = META1-POST and META2-POST; (3) an affective variable, AFFECT-POST; (4) Method, the instructional (categorical) variable.

Commonality analysis revealed that only cognitive aptitude contributed statistically significant variance to the students' grade point averages in reading-intensive core-curriculum courses, during the quarter immediately following the reading course. The explanatory variable of instructional method used in the reading course accounted for 1.77 percent of the variance in students' GPARC and was not statistically significant, $F_{N3,D236} = 1.55$. However, the R^2 for the variance contribution of method to the students' GPARC scores, as identified by the instructional method used in RDG O99A, was considered to have had a small effect on the students' GPARC. Review of the students' GPARC by method revealed the rank order: strategy training-plus (1.90), whole-language (1.75), strategy training (1.61), basic skills (1.58). An analysis of variance revealed that the students' GPARCs were not statistically significantly different by method (F value = 1.13).

Discussion

The guiding research questions for the present study were (a) what at-risk student characteristics—cognitive, metacognitive, and affective—are most important to the students' reading/study performance in college? (b) what instructional method appears to better prepare at-risk students for the demands of college reading/learning tasks? Important conclusions were drawn from the data. Although there is still much to learn about the role of student characteristics and teaching method in students' postsecondary academic performance, the present study offered substantial implications for researchers and educational practice.

At-risk Student Characteristics

It appears that the at-risk students' cognitive aptitude for college had the most effect on their academic performance in the reading/study tasks involved in READING EXAM-POST scores and in the students' GPARC. In both of these dependent variables, the increment in the proportion of variance accounted for (Pedhazur, 1982) by students' cognitive aptitude for college was statistically significant and also the largest increment of accounted variance. Further, using Cohen's (1977) magnitude of effect rules, cognitive aptitude was considered to have had a medium effect on the students' READING EXAM-POST scores and GPARC. Although this finding for postsecondary at-risk students does not indicate that the proportion of accounted variance for cognitive aptitude is as large as the proportion of accounted variance on grade point average among regularly-admitted

students during their first year of college (Fincher, 1984, 1985; Hills, 1964; Keller, Crouse, & Trusheim, 1993), the study does confirm the important contribution of the at-risk students' cognitive aptitude for college tasks. In this study, as in studies involving regularly-admitted students, combined effects of performance (SAT scores) and prior achievement (HSGPA) contributed the most variance to the students' academic performance. Generally, this study, like those with regular students, indicates that cognitive aptitude for learning in college is the most important characteristic that students bring to the multifarious reading/learning tasks of college.

Strong contributions for cognitive aptitude notwithstanding, this study is dissimilar to the cognitive aptitude studies with regular students in an important way. That is, regularly-admitted students enter college with positively correlated SATVERBAL scores and HSGPAs. In the present study, the at-risk students' SATVERBAL scores and HSGPAs were negatively correlated. Similar findings of negative correlation on these cognitive variables among at-risk students have been reported (Nist, Mealey, Simpson, & Kroc, 1990). An explanation for the negative correlation may be that the at-risk students are generally admitted to college provisionally because of an inverse relationship between the two measurements. Also, the restricted range of the at-risk students' SAT scores may affect the correlation of the two variables. For whatever the reason, the negative correlation serves to support the view that postsecondary at-risk students bring unique aptitudes to college reading/study tasks. The lack of clearly indicated aptitude for college notwithstanding, the possibility for success in college may be expected for some at-risk students. It is common to find at-risk students who have moderate SAT scores and low HSGPAs. One might conclude that these students have not exerted the effort to do well in high school although they could have been successful if they had tried to be. The opposite relationship between the two variables is more common. That is, at-risk students sometimes perform poorly on the SAT yet have moderate to high academic grade point averages in high school. These students may be those who work very hard to achieve; and when they work hard, they succeed. The lack of clear implications notwithstanding, this study supports the usefulness of reliable cognitive aptitude measures for appropriate placing of entering college students. Certainly, a student's cognitive aptitude for reading/study tasks plays an important role in academic performance on reading/study tasks. In addition, the unique characteristics of postsecondary at-risk students imply the need for informed placement and supportive services if students are to succeed.

Contrary to the researcher's expectations, findings of the present study did not indicate significant contributions of the at-risk students' metacognitive and affective characteristics to any of the dependent performance variables. In this regard, findings are consistent with others that have used the LASSI with at-risk students for assessing the contributions of metacognitive awareness and attitude on subsequent academic performance (Deming, Valerie-Gold, Idleman, 1994; Ickes & Fraas, 1990; Nist, Mealey, Simpson, Kroc, 1990). In these studies, student differences in metacognitive awareness, as measured by the LASSI, could not be used to identify groups of students who performed at different academic levels after completing the reading/study course. Specifically, gains on the LASSI scales had little impact on performance variables as measured by subsequent grade point averages. However, the findings of little or no effect for metacognitive awareness (as measured by the LASSI) are inconsistent with findings of numerous studies (among regularly-admitted and at-risk students as well) that have reported significant effects of students' metacognitive awareness on academic performance (Baker & Brown, 1984; Chase, Gibson, & Carson, 1993; McWhorter, 1993; Nist, 1993; Paris, Lipson, & Wixson, 1983; Simpson & Nist, 1992; Weinstein & Mayer, 1986). In a similar manner, the findings from this study concerning contributions of affective characteristics on students' reading/study performance (as measured by the LASSI) are inconsistent with findings from studies (among regularly-admitted and at-risk students) that have reported significant contributions of students' affective characteristics on academic performance (Corno, 1986; McCombs, 1986; Nist, Simpson, Olejnik, & Mealey, 1991;

BEST COPY AVAILABLE

Pintrich & Garcia, 1994). Perhaps the lack of contributions of metacognitive and affective variables among the at-risk students in the present study is somehow a clue to the students' deficient academic performance. If that be the case, educators should teach metacognitive awareness and affect for learning as can be implemented through self-regulated learning.

Instructional Method

It appears that the implemented teaching methods in the reading course had differing effects on the at-risk students' academic performance. For example, the variance contribution for teaching method on reading course grades was much larger than the variance contributions for teaching method on the other two dependent variables. That is, increment in the proportion of accounted variance contributed by teaching method to students' reading course grades was statistically significant and the largest proportion of accounted variance. However, in the students' READING EXAM-POST scores, teaching method appeared to have had little, if any, effect on students' performance. In the students' grade point averages in reading-intensive core curriculum courses (GPARC) during the subsequent quarter, teaching method appeared to have had a small effect.

One explanation for the large contribution of teaching method to reading course grades may be that students' reading course grades do not represent a measure of performance that is comparable to the standardized measurement nature of the READING EXAM-POST or to the diversity of tasks and contexts encountered in reading-intensive core curriculum classes. It is also possible that the large contribution of teaching method to reading course grade was related to the close association of grades with immediate learning objectives of the course. It is unlikely that method would contribute strongly (large amount of statistically significant variance) to one task (reading course grade) when similar other tasks indicate method's effect was small (in GPARC) or not at all (READING EXAM-POST)). Moreover, there is little indication that in this case the whole language students, who received the highest grades in the reading course, transferred high levels of performance in the reading course classes to high levels of performance on the READING EXAM-POST or to high levels of performance in reading-intensive core curriculum classes during the subsequent quarter. Although whole-language students had the highest reading course grades, they were third from the highest in READING EXAM-POST scores and second from highest in GPARC. Overall, students made lowest grades in core-curriculum courses with extensive required reading, eg., history courses and political science. The lowest overall GPARC in a reading-intensive core curriculum course with at least ten of the at-risk students in the course was 0.9 in History 152. The highest overall GPARC with at least ten of the at-risk students in the course was 2.75 in Art 160.

The varied effects of teaching method in the present study offer implications for researchers and for educational practice. For purposes of educational practice, the small effect of teaching method of GPARC may be the most profound result of the study although the effect was statistically nonsignificant. The small effect on the GPARC is supportive of the strategy training method where students were taught learning strategies and analytical reading using core curriculum text materials. Strategy training-plus students received the highest subsequent grades in core curriculum courses. An important implication here relates to the need to provide authentic learning experiences for students that will transfer to the reading/learning tasks of reading-intensive core curriculum courses. This finding is consistent with the substantial evidence in transfer research that indicates learning must be situated in authentic tasks for knowledge to be useful and therefore used in similar situations (Driscoll, 1994; Singley & Anderson, 1989). Further, an important issue for at-risk students in postsecondary settings is apparently not just the acquisition of (or lack of) knowledge but the acquisition of a particular use of knowledge because of the range of contexts over which use of knowledge may be required in college courses (Singley & Anderson, 1989). Hence, for students to learn to read/learn in ways that will affect

BEST COPY AVAILABLE

successful academic performance, teachers should provide contexts for reading/learning within which activities have meaningful functions. In other words, students should participate in the rigorous tasks of analyzing, integrating, and synthesizing text information in authentic core curriculum texts. Indeed, the study implies the effectiveness of actual college textbooks for reading/study course materials.

Students' READING EXAM-POST scores by method did not differ significantly by teaching method received in the reading/study course. This finding would support the claim that "teaching to the test" is of no use with the READING EXAM. To explain, if teaching the discrete skills (bottom-up reading skills) that are tested on standardized tests were conducive to stronger comprehension, as argued by transmission reading theorists (Chall, 1983; Gough, 1972; Holmes, 1953; Singer, 1994), the basic skills students would have earned the highest rather than the lowest READING EXAM-POST scores. In the present study, it appears that if students approached the READING EXAM as a test of discrete reading skills, their preparation did not assist them on the test. Strategy training-plus students earned the highest READING EXAM-POST mean score (77.23), although not significantly higher. Again, the contributions of cognitive aptitude variables (academic performance and prior achievement) to the students' READING EXAM-POST scores are consistent with other studies that have shown the important contributions of cognitive variables to academic performance.

In summary, implications for researchers are intriguing. The large effect of teaching method on the reading course grade, the small effect of method on GPARC, and the significant correlation between reading course grades and GPARC presents a puzzling research issue. Method may be more involved in the at-risk students' performance than the data explains. Moreover, the lack of contributions from metacognitive and affective variables are puzzling. Multiple tasks and contexts are likely to have presented innumerable teaching-learning combinations. Further implications for researchers lie in the awareness that little is known about the teaching-learning experiences of the at-risk students in the reading-intensive core-curriculum courses. Little transfer research has investigated the postsecondary teaching/learning context. For the present study, no generic syllabi existed for the courses. In addition, core-curriculum professors were not involved in the study in any way, and no follow-up interviews with participating students were implemented. Perhaps core-curriculum professors and students could further enlighten researchers as to the nature of learning tasks and the transfer of knowledge from prerequisite reading/study courses to regular courses.

REFERENCES

Abraham, A. A. (1988). Remedial education in college: How widespread is it? (Issues in higher education Report No. 24). Atlanta, GA: Southern Regional Education Board.

Abraham, A. A. (1991). They came to college? A remedial developmental profile of first-time freshmen in SREB states (Issues in Higher Education Report No. 25). Atlanta, GA: Southern Regional Education Board.

Anderson, R. C., & Pearson, P. D. (1984). A schema-theoretic view of basic processes in reading. In P.D. Pearson (Ed.), Handbook of reading research, (pp. 255-292). New York: Longman.

Anderson, R. C., & Pichert, J. W. (1978). Recall of previously unrecallable information following a shift in perspective. Journal of Verbal Learning and Verbal Behavior, 17, 1-12.

Astin, A. W. (1971). Predicting academic performance in college. New York: The Free Press.

Astin, A. W. (1977). Four critical years: Effects of college on beliefs, attitudes, and knowledge. San Francisco: Jossey-Bass.

Astin, A. W. (1991). Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education. New York: Maxwell Macmillan International.

Baker, L. (1985). Differences in the standards used by college students to evaluate their comprehension of expository prose. Reading Research Quarterly, 20, 36-48.

Baker, L. & Brown, A. L. (1984). Metacognitive skills and reading. In D. Pearson, R. Barr, M.L. Kamil, P. Mosenthal (Eds.), Handbook of reading research (pp. 353-394). New York: Longman.

Bartholomae, D. & Petrosky, A. (1986). Facts, artifacts and counterfacts: Theory and method for a reading and writing course. Upper Montclair, NJ: Boynton/Cook.

Binkley, M. R., Phillips, L. M., & Norris, S. P. (1995). Creating a measure of reading instruction. In B. Brickman and C. Litman, Methodological issues in comparative educational studies: The case of the IEA reading literacy study (NCES Publication No. 94-469, pp. 193-229). Washington, D.C.: U.S. Government Printing Office.

Bleich, D. (1980). Epistemological assumptions in the study of response. In J.P. Tompkins (Ed.), Reader-response criticism: From formalism to post-structuralism. Baltimore, MA: John Hopkins University.

Boylan, H. R. (1988). The historical roots of developmental education, Part III. In H.R. Boylan, Ed. Research in Developmental Education, 5(1).

Boylan, H. R., & Bonham, B. S. (1992). The impact of developmental education programs. In H. R. Boylan, (Ed.), Research in Developmental Education, 9, 1-4.

Boylan, H. R., Bonham, B. S., & Bliss, L. B. (1994) Characteristic components of developmental programs. In H. R. Boylan, (Ed.), Research in Developmental Education, 11.

BEST COPY AVAILABLE

Bransford, J. D., & Johnson, M. K. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. Journal of Verbal Learning and Verbal Behavior, 11, 717-726.

Brier, E. (1985). Bridging the academic preparation gap: An historical view. Journal of Developmental Education,8(1), 2-6.

Brown, A. L., Bransford, J. D., Ferrara, R. A., & Campione, J. C. (1983). Learning, remembering, and understanding. In J. H. Flavell & E. H. Markman (Eds.), Handbook of child psychology: Cognitive development, 3. New York: Wiley.

Brown, A. L., Campione, J. C., & Day, J. D. (1981). Learning to learn: On training students to learn from texts. Educational Researcher, 10, 14-21.

Brown, A. L., & Palincsar, A. S. (1987). Reciprocal teaching of comprehension strategies: A natural history of one program for enhancing learning. In J. Borkowski & J. D. Day, (Eds.), Cognition in special education: Comparative approaches to retardation, learning disabilities and giftedness. Norwood: Ablex.

Bureau of the Census. (1993). Statistical abstract of the United States 1993: The national data book (U.S.Department of Commerce Economics and Statistics Administration 113th Edition). Washington, DC: U.S. Government Printing Office.

Cambourne, B. (1988). The whole story: Natural learning and the acquisition of literacy in the classroom. Ontario, Canada: Scholastic-TAB.

Chall, J. S. (1983). Stages of reading development. New York: McGraw-Hill.

Charters, W. W. (1941). Remedial reading in college. Journal of Higher Education, 11, 117-121.

Chase, N. C., Gibson, S. U., Carson, J. G. (1993). Preparing students for college: Making the transition. Georgia Journal of Reading, 4-10.

Chissom, B. S., & Lanier, D. (1975). Prediction of first quarter freshman grade point average using SAT scores and high school grades. Educational and Psychological Measurement,35, 461-465.

Cohen, J. (1977). Statistical power analysis for the behavioral sciences. (rev. ed.). New York: Academic Press.

Corno, L. (1986). The metacognitive control components of self-regu ated learning. Contemporary Educational Psychology,11, 333-346.

Cross, K. P. (1976). Accent on learning. San Francisco: Jossey-Bass.

Deming, M. P., Valeri-Gold, M., & Idleman, L. S. (1994). The reliability and validity of the learning and study strategies inventory (LASSI) with college developmental students. Research and Instruction, 33(4), 309-318.

Driscoll, M. P. (1994). Psychology of learning for instruction. Boston: Allyn and Bacon.

Fincher, C. (1984, December). Assessment uses of the SAT in the University System of Georgia. IHE Newsletter.

Fincher, C. (1985). Uses of the scholastic aptitude test (SAT) in the University System of Georgia. New York: The College Board.

Fish, S. (1980). Is there a text in this class? Cambridge, MA: Harvard University Press.

Garner, R. (1994). Metacognition and executive control. In R. B. Ruddell, M. R. Ruddell, H. Singer (Eds.), Theoretical models and processes of reading (4th ed., pp. 715-732). Newark, DE: International Reading Association.

Goetz, J. P. & LeCompte, M. D. (1984). Ethnography and qualitative design in educational research. New York: Academic Press.

Goodman, K. S. (1985). Unity in reading. In H. Singer & R.B. Ruddell (Eds.), Theoretical models and processes of reading (3rd ed., 813-840).

Gough, P. B. (1972). One second of reading. In J. F. Kavanagh & I.G. Mattingly (Eds.), Language by ear and by eye. Cambridge, MA: MIT Press.

Guthrie, J. T., & Greaney, V. (1991). Literacy acts. In R. Barr, M.L. Kamil, P. Mosenthal, and P. D. Pearson (Eds.), Handbook of reading research, 2, (pp. 68-96). New York: Longman.

Hennessey, J. H. (1990). At-risk community college students and a reading improvement course: A longitudinal study. Journal of Reading 34,(2), 114-119.

Hills, J.R. (1964). Prediction of college grades for all public colleges of a state. Journal of Education Measurement,2, 155-158.

Hills, J. R., Bush, M. L., & Klock, J. A. (1965). Selective admissions in operation: The Georgia experience (Research Bulletin 65-5). Atlanta, GA: Office of Testing and Guidance, Board of Regents, University System of Georgia.

Holmes, J.A. (1953). The substrata-factor theory of reading. Berkeley, CA: California Book.

Hulick, C., & Higginson, B. (1989, November). The use of learning and study strategies by college freshmen. Paper presented at the annual meeting of the Mid South Educational Research Association, Little Rock, AR.

Hunt, R. A. (1990). The parallel socialization of reading research and literary theory. In S. B. Straw and D. Bogdan (Eds.), Beyond communication: Reading comprehension and criticism (pp. 91-105). Portsmouth, NH: Boynton/Cook-Heinemann.

Hynds, S. (1990). Reading as a social event: Comprehension and response in the text, classroom, and world. In D. Bogdan and S. Straw (Eds.), Beyond communication: reading comprehension and criticism. Portsmouth, NH: Boynton/Cook-Heinemann.

Ickes, C., & Fraas, J. W. (1990, October). Study skills differences among high risk college freshmen. Paper presented at the annual meeting of the Mid-Western Educational Research Association, Chicago, IL.

Just, M. A., & Carpenter, P. A. (1980). A theory of reading: From eye fixations to comprehension. Psychological Review, 87, 329-354,

Keller, D., Crouse, J., & Trusheim, D. (1993). Relationships among gender differences in freshman course grades and course characteristics. Journal of Educational Psychology, 85(4), 702-709.

Kintsch, W. (1994). The role of knowledge in discourse comprehension: A construction-integration model. In R. B. Ruddell, M. R. Ruddell, H. Singer (Eds.), Theoretical models and processes of reading (pp. 951-995). Newark, NJ: International Reading Association.

Kulik, J., Kulik, C-L., & Schwalb, B. (1983). College programs for high risk and disadvantaged students: A meta-analysis of findings. Review of educational research, 53, 397-414.

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. Cognitive Psychology, 6, 293-323.

Larose, S. & Roy, R. (1995). Test of reactions and adaptation in college (TRAC): A new measure of learning propensity for college students. Journal of Educational Psychology, 87(2), 293-306.

Linden, M., & Wittrock, M. C. (1981). The teaching of reading comprehension according to the model of generative learning. Reading Research Quarterly, 17, 44-57.

Marzano, R. J., & Paynter, D. E. (1994). New approaches to literacy: Helping students develop reading and writing skills. Washington, DC: American Psychological Association.

Maxwell, M. (1979). Confronting the growing need for skills programs. In Improving student learning skills (pp. 1-26). San Francisco: Jossey-Bass.

McCombs, B. L. (1986). The role of the self-system in self-regulated learning. Contemporary Educational Psychology, 11, 314-332.

McCombs, B. L. (1988). Motivational skills training: Combining metacognitive, cognitive, and affective learning strategies. In C.E. Weinstein, E.T. Goetz, & P.A. Alexander, (Eds.), Learning and study strategies: Issues in assessment, instruction, and evaluation (pp. 141-169). New York: Academic Press.

McLaughlin, M. (1993). Whole language for academically underprepared college students: A rationale, description, and assessment. Unpublished doctoral dissertation. Illinois State University, Normal.

McKeachie, W. J., Pintrich, P. R., & Lin, Yi-G. (1985). Teaching learning strategies. Educational Psychologist, 21, 153-160.

McWhorter, J. Y. (1993). The effects of postsecondary learning strategy use on performance. Unpublished doctoral dissertation. University of Georgia, Athens.

Mealey, D. L., (1988). Test review: Learning and Study Strategies Inventory (LASSI). Journal of Reading,31, 382-385.

Moore, E. C. (1915). An experiment in teaching college students how to study. School and Society, 2, 100-107.

Monson, R. J., & Pahl, M. (1991). Charting a new course with whole language Educational Leadership, 48(6), 51-53.

Morante, E. A. (1986). The effectiveness of developmental programs: A two-year follow-up study. Journal of Developmental Education, 9(3), 14-15.

Nist, S. L. (1993). What the literature says about academic literacy. Georgia Journal of Reading, 11-18.

Nist, S. L., Mealey, D. L., Simpson, M. L., & Kroc, R. (1990). Measuring the affective and cognitive growth of regularly admitted and developmental studies students using the Learning and Study Strategies Inventory (LASSI). Reading Research and Instruction, 30(1), 44-49.

Nist, S. L., Simpson, M. L., & Olejnik, S., & Mealey, D.L. (1991). The relation between self-selected study processes and test performance. American Educational Research Journal, 28(4), 849-874.

Olejnik, S., & Nist, S. L. (1992). Identifying latent variables measured by the Learning and Study Strategies Inventory (LASSI). Journal of Experimental Education, 60(2), 151-159.

Paris, S. G. (1988). Models and metaphors of learning strategies. In C.E. Weinstein, E. T. Goetz, & P. A. Alexander, (Eds.), Learning and study strategies: Issues in assessment, instruction, and evaluation (pp. 141-169). New York: Academic Press.

Paris, S. G., Lipson, M. Y., & Wixson, K. K. (1983). Becoming a strategic reader. Contemporary Educational Psychology,8, 293-316.

Paris, S. G., & Myers, M. (1981). Comprehension monitoring: memory and study strategies of good and poor readers. Journal of Reading Behavior, 13, 5-22.

Pascarella, E. T., & Terenzini, P.T. (1991). How college affects students: Findings and insights from twenty years of research. San Francisco: Jossey-Bass.

Pedhazur, E. J. (1982). Multiple regression in behavioral research: Explanation and prediction (2nd ed.). New York: Holt, Rinehart & Winston.

Perfetti, C. A. (1988). Verbal efficiency in reading ability. In G. E. MacKinnon, T. G. Waller, & M. Daneman (Eds.), Reading research: Advances in theory and practice,6, (pp. 109-143). San Diego, CA: Academic Press.

Perfetti, C. A. (1989). There are generalized abilities and one of them is reading. In L. Resnick (Ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser (pp. 307-335). Hillsdale, NJ: Erlbaum.

Perfetti, C. A. (1991). Representations and awareness in the acquisition of reading competence. In L. Rieben & C. A. Perfetti (Eds.), Learning to read: Basic research and its implications (pp. 33-44). Hillsdale, NJ: Erlbaum.

Perfetti, C. A. (1992). The representation problem in reading acquisition. In P. B. Gough, L. C. Ehri, & R. Treiman (Eds.), Reading acquisition (pp. 145-174). Hillsdale, NJ: Erlbaum.

Perfetti, C. A., & Curtis, M. E. (1986). Reading. In R. F. Dillon.& R. J. Sternberg (Eds.), Cognition and instruction (pp. 13-57). San Diego, CA: Academic Press

Peterson, C. (1988, August). Explanatory style and academic performance. Paper presented at the annual meeting of the American Psychological Association, Atlanta.

Pintrich, P. R., & Garcia, T. (1994). Self-regulated learning in college students: Knowledge, strategies, and motivation. In P. R. Pintrich, D. R. Brown, and C. E. Weinstein (Eds.), Student motivation, cognition, and learning (pp. 113-133). Hillsdale, NJ: Erlbaum.

Rich, S. J. (1985). Restoring power to teachers: The impact of whole language. Language Arts, 62, 717-724.

Robinson, H. A., Faraone, V., Hittleman, D. R., & Unruh, E. (1990). Reading comprehension instruction in America: 1910-1987. In Fitzgerald, J. (Ed.), Reading comprehension instruction 1783-1987: A review of trends and research, 66-89. Newark, NJ: International Reading Association.

Rohwer, W. D., & Thomas, J. W. (1987). The role of mnemonic strategies in study effectiveness. In M. A. McDaniel & M. Pressley (Eds.), Imaginal and mnemonic processes. New York: Springer-Verlag.

Rosenblatt, L. M. (1978). The reader, the text, the poem: The transactional theory of the literary work. Carbondale, IL: Southern Illinois University.

Rosenblatt, L. M. (1985). The reader, the text, the poem: The transactional theory of the literary work. Carbondale, IL: Southern Illinois University Press.

Roueche, J. E., & Snow, J. J. (1977). Overcoming learning problems. San Francisco: Jossey-Bass.

Rumelhart, D. E. (1994). Toward an interactive model of reading. In R. B. Ruddell, M. R. Ruddell, and H. Singer (Eds.), Theoretical models and processes of reading (pp. 864-894). Newark, NJ: International Reading Association.

Rumelhart, D. E., & McClelland, J. L. (1980). An interactive activation model of the effect of context in perception. (Part 2: CHIP Technical Rep.) LaJolla: University of California.

Scheffe', H. (1953). A method for judging all contrasts in the analysis of variance. Biometrika, 40, 87-104.

Simpson, M. L., & Nist, S. L. (1992). A case study of academic literacy tasks and their negotiation in a university history class. In C. K. Kinzer & D. J. Leu (Eds.), Literacy research, theory, and practice: Views from many perspectives. Forty-First Yearbook of the National Reading Conference (pp. 253-260). Chicago: National Reading Conference.

Sinatra, G. M., & Royer, J. M. (1993). Development of cognitive component processing skills that support skilled reading. Journal of Educational Psychology, 85(3), 509-519.

Singer, H. (1994). The substrata-factor theory of reading. In R. B. Ruddell, M. R. Ruddell, and H. Singer, (Eds.), Theoretical models and processes of reading (4th ed., pp. 895-927). Newark, DE: International Reading Association.

Singley, M. K., & Anderson, J. R. (1989). The transfer of cognitive skill. Cambridge, MA: Harvard University Press.

Stone, C. W., & Colvin, C. (1920). Study as a source of motive in educational psychology. Journal of Educational Psychology,11, 348-354.

Straw, S. B. (1990). Challenging communication: Readers reading for actualization. In D. Bogdan and S. B. Straw (Eds.), Beyond communication (pp. 67-89). Portsmouth, ME: Boynton/Cook.

Stricker, L. J., Rock, D. A., & Burton, N. W. (1993). Sex differences in predictions of college grades from scholastic aptitude test scores. Journal of Educational Psychology, 85(4), 710-718.

Thomas, J. W. (1980). Agency and achievement: Self-management and self-regard. Review of Educational Research 50,(2), 213-240.

Thomas, J. W., & Rohwer, W. D. (1986). Academic studying: The role of learning strategies. Educational Psychologist, 21,(1&2), 19-41.

Thompson, L. R. (1993). An analysis of the effect of developmental education program organization on student retention and academic achievement in public, four-year, non-research colleges and universities. Unpublished doctoral dissertation. Memphis State University, Memphis.

Tinto, V. (1987). Leaving college. Chicago: University of Chicago Press.

Tukey, J. W. (1954). Causation, regression and path analysis. In O. Kempthorne, T. A. Bancroft, J. W. Gowen, and J. D. Lush, (Eds.), Statistics and mathematics in biology. Ames, IA: Iowa State College Press.

University System Board of Regents. (1993, October 21). Policy 303.02 (in Memorandum to university system presidents). Atlanta, GA: University System of Georgia.

van Dijk, T. A., & Kintsch, W. (1983). Strategies of discourse comprehension. San Diego, CA: Academic Press.

Vygotsky, L. S. (1978). Mind in society (1938). (Eds. and Trans. M.Cole, V. John-Steiner, S. Scribner, and E. Sonberman). Cambridge, MA: Harvard University Press.

Weaver, C. (1994). Parallels between new paradigms in science and in reading and literary theories: An essay review. In R. B. Ruddell, M. R. Ruddell, H. Singer (Eds.), Theoretical models and processes of reading (pp. 1185-1202). Newark, NJ: International Reading Association.

Weinstein, C. E. (1987). LASSI user's manual. Clearwater, FL: H&H Publishing.

Weinstein, C. E., & Mayer, R. E. (1986). The teaching of learning strategies. In M. C. Wittrock, (Ed), Handbook of research on teaching (pp. 315-327). New York: Macmillan.

Weinstein, C. E., Palmer, D. R., & Schulte, A. C. (1987). Learning and Study Strategies Inventory. Clearwater, FL: H&H Publishing.

Weinstein, C. E., Zimmerman, S. A., & Palmer, D. R. (1988). Assessing learning strategies: The design and development of the LASSI. In Weinstein, C.E., Goetz, E.T., Alexander, P.A. (Eds.), Learning and study strategies: Issues in assessment, nstruction, and evaluation. (pp. 25-40) New York: Academic Press.

Wittrock, M. C. (1981). Reading comprehension. In F.J. Pirozzolo & M C. Wittrock (Eds.), Neuropsychological and cognitive processes of reading. New York: Academic Press.

Wyatt, M. (1992). The past, present, and future need for college reading courses in the U.S. Journal of Reading,36(1), 10-20.

APPENDIX

Definition of Terms

At-Risk College Students: Under-prepared students provisionally enrolled in colleges and universities who have unacceptable high school academic credentials and who are thus at risk of continuing to graduation from college.

Cognitive Aptitude for Learning in College: A student's academic readiness for college learning tasks as measured by Scholastic Aptitude Test verbal scores (SATVERBAL), high school grade point average (HSGPA), and the College Placement Examination in Reading (READING EXAM-PRE).

Metacognitive Awareness: The at-risk student's awareness of the strategic nature of college reading and learning, including awareness of how to plan, monitor, and control reading and learning tasks. In this study, metacognitive variables are examined in terms of students' metacognitive awareness for college as measured by the two variable sets (a) META1, the LASSI (Weinstein, Palmer, & Schulte, 1987) latent variable, Cognitive Activities (Olejnik & Nist, 1992), (b) META2, the LASSI (Weinstein, et al., 1987) latent variable, Goal Orientation (Olejnik & Nist, 1992). Note: the LASSI scales, information processing, study aids, and self-testing comprise the Olejnik and Nist (1992) Cognitive Activities. The LASSI scales, anxiety, test strategies, and selecting main ideas comprise the Olejnik and Nist (1992) Goal Orientation.

Affect Toward Learning in College: A student's attitude toward learning in a postsecondary setting as measured by the affective variable set AFFECT, the LASSI (Weinstein, et al., 1987) latent variable, Effort-related Activities (Olejnik & Nist, 1992). Note: the LASSI scales, motivation, concentration, and time management comprise the Olejnik and Nist (1992) Effort-related Activities.

Basic Skills Method: A postsecondary reading instructional method that focuses on the student's development of specific and discrete reading skills. Sequentially ordered reading skills are taught primarily in isolation from whole texts. Students practice finding main ideas of paragraphs and short passages, identifying major and supporting details, drawing inferences, recognizing relationships of ideas, and learning specific vocabulary for college.

Strategy Training Method: A postsecondary reading/learning instructional method that focuses on the development of autonomous learning behaviors. Students are taught to self-regulate their reading/learning tasks in college through the selection and application of appropriate strategies. Students are taught to organize text content selectively so as to facilitate the rehearsal of information for maximum encoding and retention. Specific strategies taught generally include mapping, charting, marking, and annotating text, as well as goal setting, time-management, mnemonics, test preparation and test-taking strategies. Instructors demonstrate strategic reading and learning processes. Students are required to read, study, and pass examinations on simulated regular college tests.

Strategy Training-Plus Method: A postsecondary reading/learning instructional method that concentrates on learning strategy training as described above, with the addition of direct instruction in analytical reading processes. In the present study, instructors in this category typed their teaching method as strategy training. However, they stated that they include some practice in analyzing short sections of text within larger portions of text, that is, students practice drawing relevant inferences, analyzing writers' patterns of organization, and learning selected college-level vocabulary words. Materials used in the strategy training and strategy training-plus classes were the same. Both

groups of instructors used a reading/study strategy text that included chapter excerpts from core curriculum college texts.

Whole Language Method: A postsecondary combined reading/writing instructional method that views college reading to be dependent upon the development of literacy for academia, primarily reading and writing. In the tradition of a whole-language approach to language development, students are required to develop writing skills through literary responses to readings. Teaching materials are primarily various forms of literature, novels, anthologies, biographies, short stories.